

A.2 GEOLOGICAL DATA

A2.1 Regional Geology

A2.1.1 Structure

The Bass Basin is an elongate offshore basin trending generally NW-SE. It covers an area of approximately 65,000 sq.km. and contains sediments which range in age from Late Jurassic/Early Cretaceous to Recent. It is bounded to the south by Tasmania and to the north by the coast of Victoria between Mornington Peninsula and Wilsons Promontory. The King Island High and the King Island/Mornington Peninsula Ridge to the west, and Flinders Island and the Bassian Rise to the east, separate the Bass Basin from the similarly aged Otway and Gippsland Basins respectively.

The basin is believed to have initially formed in response to a NE-SW tensional stress field associated with the rifting of the Antarctic Plate from the Australian Plate during the Late Jurassic. This produced a series of NW-SE trending down to the basin normal faults. In a regional sense this tensional stress field remained orientated to the NE-SW throughout the Tertiary. However, large scale N-S orientated normal faulting occurred within the southeastern part of T-15-P during the Mid-Cretaceous to Early Paleocene.

A2.1.2 Depositional History

Initial downwarping of the basin during the Late Jurassic/Early Cretaceous is marked by the deposition of fine-grained, volcanoclastic sediments probably derived from the magmatic arc which extended along the eastern margin of the Australian Plate at this time. During the early Late Cretaceous, structuring occurred in the southeastern part of the basin while downwarping continued in the more centrally located areas of the Bass Basin, e.g. around Chat No 1. In the southeast, asymmetric rifting and rapid subsidence of half grabens took place. This led to the rapid erosion of active fault scarps and the deposition of coarse clastic sediments in alluvial fan to fluvial, deltaic, and lacustrine conditions. Tectonic activity lessened after the Late Cretaceous and this area conformed to the process of slower subsidence typical of the rest of the basin. Fluvial, deltaic and lacustrine sediments were deposited until the Eocene when structural readjustments and increased rates of sediment loading resulted in a marine transgression. Basal Oligocene coarse sediments were deposited followed by marine mudstones, marls and limestones during the remainder of the Oligocene and Miocene. Marine conditions have prevailed until the present.

A2.1.3 Stratigraphy

Late Jurassic(?) - Lower Cretaceous

Referred to as the Otway Group, these sediments have been intersected in the basin in only one well to date, namely Durroon No. 1 located on the southeastern margin of the basin. In Durroon No. 1 the sediments consisted of lithic sandstones